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**GEOLOGY 103**

**ENVIRONMENT OF THE EARTH**

**BULLETIN INFORMATION**

GEOL 103 - Environment of the Earth (4 credit hours)

**Course Description:**
Analysis of basic energy cycles of the earth. Interaction of human activity with earth processes to affect the environment.
Note: Three lectures and three laboratory hours each week. Field trips required.

**SAMPLE COURSE OVERVIEW**

This course describes the earth as a system, the various processes that affect humankind. It explains the makeup of the earth, its resources and the various uses and misuses of the same. This course will provide you with an excellent background on basic concepts of geology, rocks, minerals and earth processes; information on natural hazards; relation between natural resources and pollution and environmental management of human activities and earth resources. Topics include:

1. foundations of environmental geology
2. hazardous earth processes
3. human interactions with the environment
4. minerals, energy and environment
5. global change, land use and decision-making

**ITEMIZED LEARNING OUTCOMES**

**Upon successful completion of Geology 103, students will be able to:**

1. Demonstrate basic understanding of the scientific method
2. Explain the principal processes involved in Earth formation and evolution and the rock cycle
3. Identify and explain the scientific processes involved in natural hazards
4. Discuss water and energy resources including the formation of oil and natural gas and pollution of surface and groundwater
5. Discuss the evolution of the global climate over geological time and the influence of humans on the present day climate

**SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS**

1. *Environmental Geology*, Eighth Edition, Edward A Keller, Pearson Prentice Hall, NJ, 2000 ISBN 0-13-022466-9; QE38.K45 2000

**SAMPLE ASSIGNMENTS AND/OR EXAM**

This course employs a variety of methods to measure student performance and mastery of the concepts and principles presented.

1. **Three in class 1-hour tests:**  Students are tested at the end of each section of the course. Tests are closed book and closed notes. The format of test is mostly multiple-choice with some fill-in the blank and essay questions. All questions come from topics covered in lectures, the reading assignments, and the laboratory.
2. **Final Exam:** The final exam is not cumulative and covers only material in the final section of the class.  The final exam is closed book and closed notes. The format of the exam is mostly multiple-choice with some fill-in the blank and essay questions. All questions come from topics covered in lectures, the reading assignments, and the laboratory.
3. **Lab:** Laboratory exercises supplement the material covered in the classroom. Weekly laboratory exercises are based on hands-on analysis of geologic materials, processes (e.g., weathering), and concepts, and require students to document their work on laboratory handouts.

**SAMPLE COURSE OUTLINE WITH TIMELINE OF TOPICS, READINGS/ASSIGNMENTS, EXAMS/PROJECTS**

Week 1 Introduction to the class

Chapter 1: Philosophy and concepts

Week 2 Chapter 2

Week 3 Chapter 3: Soil – formation, types and characterization

 Soil – Impact on environment

*Laboratory Exercises*: *Minerals*

Week 4 Review of the first section of the course

Test 1

*Laboratory Exercises*: *Rocks*

Week 5 Chapter 4: Introduction to Natural Hazards

Chapter 5:    Rivers and Flooding

*Laboratory Exercises: Geological Time*

Week 6 Chapter 6:    Slope processes, landslides and subsidence

Chapter 7:    Earthquakes

*Laboratory Exercises: Earthquakes*

Week 7 Chapter 8:    Volcanoes

Chapter 9:     Coastal processes

*Laboratory Exercises: Topographical Maps*

Week 8 Review of natural hazards

Test 2

*Laboratory Exercises: Weathering*

Week 9 Chapter 10: Water Resources

Chapter 11:   Water Pollution

*Laboratory Exercises: Properties of Soils*

Week 10 Chapter 12:   Waste Management

Chapter 13:  Geologic aspects of human health

*Laboratory Exercises: Soil Infiltration*

Week 11   Chapter 14:    Mineral Resources

Review on resources and pollution and waste management

*Laboratory Exercises: Groundwater*

Week 12 Test 3

Chapter 15: Energy Resources

*Laboratory Exercises: River Discharge Rates*

Week 13 Chapter 16: Global climate change

Chapter 17: Air pollution

*Laboratory Exercises: Congaree River*

Week 14 Chapter 18: Geology society and the future

Final Review

Review- Energy resources, climate change, air pollution, societal issues

*Laboratory Exercises: Make-up lab if permitted*

Week 15 **Final Exam according to University exam schedule**